The CHEMIST

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FLORENCE E. WALL, *Editor*, 233 Broadway, New York City

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An Invitation from Washington

The Annual Meeting of the American Institute of Chemists in Washington on May 9th, offers the out-of-town members an opportunity to combine pleasure and business.

Washington is at its prettiest in May, and the Washington Chapter of the Institute extends its heartiest welcome to all members and friends of the Institute who expect to attend this Annual Meeting. Arrangements will be made so that visiting members may see not only the sights of general interest but also the various laboratory exhibits where they can learn what the government laboratories are doing in their own particular fields.

As the government laboratories close at 1 P. M. on Saturday, it will be necessary to start these inspection trips early. Autos will leave the Carlton Hotel at about 9:30 A. M. and will return in time for lunch and the business meeting in the afternoon. Under the proper guidance, which will be furnished, you will be agreeably surprised at the number of points of interest you will be able to see in a few hours.

The following trips are suggested:

Bureau of Standards	Arlington Farm
Department of Agriculture	Bureau of Mines
Geological Survey	Patent Office
Geophysical Laboratory	Fixed Nitrogen Laboratories
National Institute of Health	National Academy of Sciences

The *Bureau of Standards* offers a trip of popular interest as well as of specialized subjects. The *National Academy of Sciences* offers an exhibit of popular scientific curiosities. Nearly all the other places mentioned are of more specialized interest. The *Department of Agriculture* includes most of the Bureau of Chemistry and Soils as well as laboratories dealing with biological chemistry, etc. The trip marked *Arlington Farm* includes the *Color and Farm Wastes Laboratory*, the *Fertilizer Research*, *Cold Storage*, etc.

If members are uncertain as to the particular place where their interest lies, an inquiry to the Committee will bring them detailed information.

Fraternally yours,

Washington Chapter, A.I.C.

DANIEL F. J. LYNCH, *Chairman*

Chemists and People[1]

By E. T. Sterne, *F.C.I.C.*

Your Chairman and I have had the privilege of discussing Institute affairs on both sides of the border and it is at his suggestion that I speak here in the world's second largest city where there are congregated a maximum concentration of both chemists and people on the subject of "Chemists and People."

I believe that I can without fear of contradiction claim that that calling to which we all belong can rightfully be classed as one of the learned professions, and that we can without undue ego hold our heads as high as that of our worthy contemporaries practising the science of law, medicine, and the church.

The evolution of the relationship of the various professions to humanity as a whole has developed progressively along lines parallel to the development of humanity in all its other relationships, and we see the professional men of today in a position very different from that occupied by those who went before. It was the natural thing for the professional men of early times to be able to persuade the masses of the people that they were little less than gods, and they were therefore able to maintain an isolation only a little less than that of the gods of Mount Olympus, or Odin and Thor of Scandinavia, Jehovah of the tribes of Israel, or Isis of the Egyptians. This isolation probably had its advantages in the Middle Ages because by means of it a continuity of knowledge was effected in the monasteries through those times when many threads were broken and much valuable knowledge lost.

The situation, however, is entirely changed today. The old ideas of professional isolation have gone by the board and I think we are all pretty well agreed that this world has now been made so small that we must rub shoulders in a friendly, co-operative manner and that we cannot maintain an air of superiority or feelings of independence from the rest of the people.

The preachers and teachers must now move freely among mankind. Knowledge of common law is no longer solely confined to the lawyer and medicine has had to come out of its seclusion and mix not only with the people but also with its related sciences. Necromancy, magic, and mystery are gone and while fetish worship may still be apparent in our highly civilized state, cause and effect is the basis of modern practice.

[1] Address delivered before the New York Chapter on March 6, 1931, by E. T. Sterne, President of the Canadian Institute of Chemistry.

So the alchemist really finds little place in modern chemistry. The mixtures are no longer blended as by the Witch of Endor from

> "Eye of newt and toe of frog,
> Wool of bat and tongue of dog,
> Like a hell broth boil and bubble."

Truth must be the foundation of our science and the modern alchemist must still woo truth from the stony heart of nature if mankind can continue to live in peace and safety on this ever shrinking globe.

In the ages past it may have been sufficient to establish truths and facts and to let the matter rest there, but the ultimate criteria as to the value of our endeavors will be the degree to which our labor may be expressed in the lives of the people, not only in their physical comfort but also in their mental and spiritual well-being.

There was a time when it was considered that if a fact might be useful it was not worth discovering and even today, to too many of our leaders in fundamental research, what they term "sordid commercialism" is most repugnant to their sensitive nostrils. But just as those in the other learned professions have been able to humanize their profession so we in the profession of chemistry must bring about a development in this direction. Do not misinterpret my ideas, however, and imagine that I would minimize the wonderful work that is being done in pure research and would aim to make our science more practical—far be it from that. I do believe that one of the dangers which face modern scientific education is the tendency in many quarters for universities to become super-technical schools, but our profession, more than any other, combines a wide range of types of individuals and activities.

The foundation of the chemical profession, if it is to stand, must be knowledge; and knowledge is only won by those who, while their companions sleep, are toiling upward in the night. The science of chemistry, and to a very large extent our Western civilization, depends on that group within our profession—the *discoverers*—the searchers, eager to know, not caring why, but ever adding to the store of human knowledge. Even this searcher is not in any sense independent of the others of his kind, who are searching in other places discovering other truths which are to provide him with the stepping stones to his discovery. And just as he is not independent from other research men, past and present, so does his truth become a dead thing if, after discovery, it is locked in the archives of his library.

Another group within our profession then takes up the work, and those are the *inventors*—the adapters. While the discoverer is interested in principles, theories, and facts, the inventor and adapter or producer, always

leaning on the discoverer, is taking those facts, combining them, and assembling them into articles for human comfort and advancement.

Here again the process must not be allowed to stop, because those articles for human comfort and advancement are of no use as long as they are locked up in the warehouse of a producing company. Consequently the *business men of chemistry* and of industry, all of whom use chemistry knowingly or otherwise, take those articles to the people, render them valuable and collect the tribute to be returned all along the line back to the source.

This indicates the essentiality of co-operation among all the members within the profession. Too often in the past our pure scientist has looked with scorn from the pinnacle of Mount Olympus on the applied scientist and similarly the applied scientist has looked with amusement, not with reverence, at the effigy on the mountain. This is all wrong. All have a part to play and the salesman, chemist by training, adapting a new chemical product to a new industry may be applying his chemical knowledge and practising his profession in a way equally productive with a short-sighted professor, who is endeavoring to discover the composition of a rare compound. The members practising the profession of chemistry must be more than chemists if recognition is to be obtained from the eyes of the masses.

To me it is rather disgusting that even yet we are looked on with awe by those of other callings who can calmly ask us to do the work of a magician. The masses of people must be brought to realize that the chemist is not a magician but a man like themselves, with all their privileges and all their responsibilities but trained in a science of immense breadth containing an enormous amount of detail by the knowledge of which he has been able to make amazing contributions to their every-day life. In other words, that there is no mystery but just chemistry in his work.

If then, we, as a profession, are going to mix with the people and become, shall I say *humanized*, what are our safeguards? Other professions have answered that question for us with ample demonstration that one of the first requisites of any profession is an association of professional men. Therefore it logically follows that the first organization that a qualified chemist should join is his professional organization; that is, the Institute of Chemists or Chemical Engineers, whichever line he happens to be following.

I believe that this is essential for more reasons than one, for with an association of qualified chemists, on whose training the hall-mark of the organization has been placed, the interests of the public at large are safeguarded. Who is better able to judge the qualifications of an individual than his fellows who are also skilled in his art? This is not a question of class

legislation. It is a recognition that there is a minimum of requisite skill when one is included in a calling that deals not only with inanimate things but also with materials that affect the life of the people itself. I believe also that the chemist should join the Institute as the only place where he meets on common ground of qualification with others known to be skilled in his art.

I would not for a moment disparage such organizations as the American Chemical Society to which we are all proud to belong. We Canadians are particularly proud to have contributed to the guidance of this Society in the person of our esteemed compatriot, Dr. L. V. Redman. But the first requisite for membership in the American Chemical Society is fifteen dollars, whereas the requisite for membership in the Institute of Chemists is that which cannot be bought at a price.

In matters dealing with the practice of the profession and its relationships within itself, I have nothing to say; but there are other points that I would like to mention specifically which I believe would enhance the position of the chemist in his relationship to the general public.

Not only in the field of pure research but also in the fields of the utilization of fundamental knowledge to human good the chemist is in the background. Unlike the physician, who mingles with all people, the chemist deals mostly with things and with the relatively small number of persons with whom he is immediately associated in his daily work. That of him which mingles with the people is his product, and I would suggest a wider association of the name of the inventor or discoverer with the product that is placed on the market. You have among your members magnificent examples of the usefulness of this in the association of Dr. Wesson with *Wesson Oil*, and the association of Dr. Redman with *Redmanol*.

The public must have human interest otherwise we would all go quite insane and become mere machines. All work, even scientific work, should assume pleasurable relaxation and the closer a chemist can associate himself with his ideal or dream in the minds of human animals, the better off he will be. If he is making that more possible he will seem more worthwhile; otherwise he comes in contact with the public only through the depersonalized product of his work or brain.

Should not then the Institute or the profession open to the public the treasures of mind and the romance of developments that are going on behind the scenes in the practice of our profession? Whenever stories do leak out they are eagerly seized on by the public because they are so intimately connected with their every-day life and because they are to them so romantic in their conception and in their working out of details. Would it not then be the part of wisdom to organize our activities so that the public might learn more of the thoughts and ideals, travail, and labor

that are behind those products, which they are accepting each day as commonplace? It would be edifying and entertaining to the public and would remove the stigma of mysticism, which is so often associated with us.

The *Chemical Foundation* in your city is doing a marvelous work in this respect. Could it not be widened so that more people might enjoy the accounts of such work as is now going on as well as what has already been accomplished?

The work of the American chemist in the last half-century has been of such a high order that it can be held up for comparison with the work of any other group of scientific men in the world. I can think of nothing that would be more interesting and more enlightening to the American public than some of the stories of the work done by their own people and the great advances in Western civilization which have been made possible by that work.

When chemists and engineers have, in the eyes of the world, moved up to what is termed an executive position they have a tendency to feel that they have left the profession of chemistry behind. They seem to feel that they are no longer engineers or chemists and that unless they are actually working in a laboratory, or giving formal expert chemical advice, or teaching they are not following *professional chemistry*. In point of fact I contend that any man who has had a sound chemical or chemical engineering training must go through the rest of his life practising chemistry, and laboratory workers must accord equal professional chemical activity to those not working in laboratories.

Chemistry is the science of materials. Once we have been trained in it we cannot cast it aside like an old coat; in fact we continually find its ever-increasing usefulness in fields outside of what has always been considered purely chemical work.

The day of high-pressure salesmanship has passed and with its passing has come the chemical and engineering salesman, who applies his science that his product may enjoy greater usefulness. Business is a battle in which the chemist must match his wits with men trained in other lines of endeavor. If he wins he is the better man, because business organizations are not set up with the idea of paying large salaries to chemists and their very nature causes the keenest of competition in the matter of rendering service.

To the men who are truly practising their profession the past decade has proved that there is a real field for service and a real field for the application of chemistry. The chemist, however, cannot hope to gain competency in all fields of endeavor. It would be rather too much to expect a good research man to be a good sales manager, it is greatly to the interest of

pure chemists in industry to see that the management insists on a certain amount of general chemical training and experience for those who are in charge of all departments of the business. Every board of directors should now have a competent chemist on it; or at least if not a chemist, an individual who knows and appreciates enough of the chemistry of both his own business and that of the opposition—whatever it may be—to assist the direction of affairs.

Our scientific training should have fitted us for the analyzing of problems of management and direction, so that a well-trained chemical mind should be an asset on the board of any business organization.

Chemists should also take a more active part in the administration of public affairs. While this may open many subjects for controversy, and while we often look askance at the manner in which so much of the Nation's business is conducted, it does not remove from us our responsibility as citizens.

With public interest which is so vital a consideration to the profession followed so closely by its private interest, let us again turn to that safeguard that I mentioned a little while back—your Institute itself. Should it not be the first consideration of all members of the profession that they associate themselves with their professional body? The question is immediately raised by individuals, "What shall I get out of it?" This I contend is an unfair question; it should be, "What can I give to it?" This is a profession to which we all owe not only our livelihood but also the pleasure which we derive from our daily work and here as in all other walks of life, "He profits most who serves best."

The association in their professional organization of all chemists who are duly qualified gives strength to that organization by means of which it can protect not only the public but also the members of the profession themselves. I am hoping that the members of my profession on both sides of the border will feel the urge to unite and join this association not for what they can get but for what they can give. Kipling has given us a lead when he wrote

> "Raise ye the stone or cleave the wood
> To make the path more fair or flat;
> Lo, it is black already with blood
> Some son of Martha shed for that.
>
> Not as a ladder from earth to heaven;
> Not as a witness to any creed,
> But as simple service simply given
> To his own kind in their common need."

The discussion covered many of the points brought out by Mr. Sterne. Dr. Breithut endorsed what had been said about the great value of

associating the chemist's name with his work, and expressed regret that commercial houses, pharmaceutical companies, and others who market the products of chemical research generally feature only their firm's name, and neglect to give public credit to the chemist. The featuring of an individual name usually indicates the product of independent workers.

Mr. Quigley gave an excellent discussion of the true meaning and value of public relations on chemists and their work. He deplored the attitude of mind which makes both the chemist and his business associates think that he "used to be a chemist" when he becomes an executive of a corporation. Public relations work is of the greatest importance to industry. Since research is subscribed by stockholders and laymen—not by the chemists themselves—correct interpretation is most necessary to proper appreciation.

Mr. Quigley traced the history of recognized public relations through the various branches of technical commercial enterprises, and drew a sharp line between the function of public relations, which is to explain and interpret, and that of advertising which is to emphasize and promote.

Mr. Baeza proposed a concrete brief for action, to effect adequate and appropriate publicity for the work of chemists and for the Institute.

Chemistry and the National Institute of Health

By The Honorable Joseph E. Ransdell[1]

Chemistry, the science that treats of the composition of substances and the transformations which they undergo, has always had a fundamental interest in the preservation of public health. From the laboratory of Louis Pasteur, a distinguished chemist, came the announcement that bacteria have ancestors and progeny, thereby destroying the illusion of spontaneous generation. From that day to this, the science of medicine has made marvelous progress, until now we can face the future with the hope of appreciably limiting the ravages of disease, if not completely eradicating it. Out of that laboratory went forth the discovery of *pasteurization*, one of the most useful of all scientific findings in preserving the lives of countless people by making milk safe. It was of Pasteur, the chemist, that one of his eminent medical contemporaries, Dr. William Osler, said:

> "He is the father of modern medicine, one of the three or four greatest characters in the modern world; the most perfect man who has ever entered the kingdom of science."

The torch of pure research so persistently held aloft by Pasteur has been kept burning by the scientists who followed him. But, somehow they have not kept pace with the times in matters of public health research. It is a sad commentary on the agencies dealing with health conservation that influenza and pneumonia are as deadly today as they were a hundred years ago; that cancer and heart affections are claiming greater tolls in lives each year; and that the population of our institutions for the mentally deficient is increasing at an alarming rate. The list might be extended to great length, but it would serve little purpose. It need only be stated that in spite of the fact that remarkable progress has been made in giving man longer life expectancy from birth—very greatly decreasing mortality among children—nothing has been done to give him a greater span of life during his most productive years—the period popularly called middle life.

It is only fair to say, however, that our lagging in the matter of health research has been due, not to the inefficient mentality of our scientists, but to the woeful lack of facilities, and the discouraging insufficiency of funds to stimulate recruits in science. The crying need of the American scientist engaged in a study of health problems is a great laboratory, fully equipped to cope with disease, where he can carry on his work in close

[1] Senator from Louisiana.

co-operation with many other students of the laws of life, and with every possible facility at his disposal.

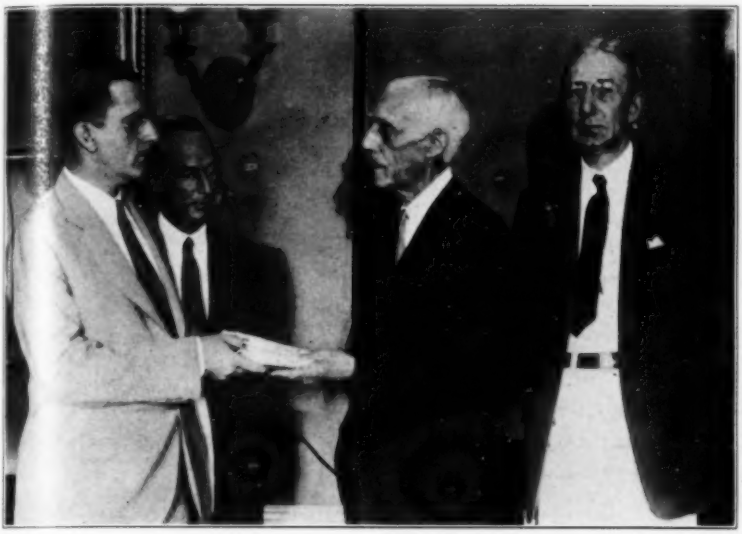
That need was supplied by the bill creating the National Institute of Health, which was signed by President Hoover on May 26, 1930.

This act contains three distinct features:

First. It creates the National Institute of Health in the Public Health Service under the administrative direction and control of the Surgeon General, for the special purpose of pure scientific research to ascertain the cause, prevention, and cure of disease affecting human beings. It does not establish any new bureaus or commissions, but utilizes existing Government machinery and provides for enlargement of the Hygienic Laboratory, which is merged in and made an essential part of the Institute. An appropriation of $750,000 is authorized to carry out the provisions of the measure.

Second. It authorizes the Treasury Department to accept gifts unconditionally for study, investigation, and research in problems relating to the health of man and matters pertaining thereto, with the proviso that if gifts in the sum of half a million dollars or more are made, the name of the donor shall be perpetuated by establishment of a suitable memorial in the Institute. This feature of the act is most unusual and important. No precedent can be recalled of donations from philanthropists to enable the Federal Government to maintain institutions for the purposes of research with possibly two exceptions—the Smithsonian Institution and the Library of Congress. The Smithsonian was founded as the result of the gift of James Smithson. It stands as a monument to his name and its achievements are known throughout the world. Nothing can be suggested to the philanthropists of America, many of whom are seeking some wise use for their wealth, that will do more good to humanity than to contribute liberally to the Federal Government for public health purposes. This provision has already brought forth responses in the form of donations, one for one dollar from Mr. Charles P. Wilder, of Worcester, Massachusetts, and one for one hundred thousand dollars from the *Chemical Foundation, Inc.*, of New York City.

Third. It proposes the establishment and maintenance in the Institute of a system of fellowships in scientific research in order to secure the proper personnel and to encourage and aid men and women of marked proficiency to combat the diseases that menace human health. This provision of the act is regarded as its outstanding feature. These fellowships offer an opportunity for those especially qualified to serve their fellowmen in the most useful of all ways. While it is contemplated that the bulk of research work will be carried on in the Institute laboratories in Washington, it is not so limited, for under the terms of the act, these Fellows can be assigned



W. W. BUFFUM, TREASURER OF THE CHEMICAL FOUNDATION OF NEW YORK, PRESENTING $100,000 IN BONDS TO SECRETARY MELLON, FOR THE ENDOWMENT OF A FELLOWSHIP IN THE NEW NATIONAL INSTITUTE OF HEALTH.
Others in the group are Dr. Hugh S. Cummings (right) Surgeon General, and Dr. Lewis R. Thompson (left rear) Assistant Surgeon General.

to institutions in any part of the globe wherever it would be most advantageous for health problems to be studied.

Until this Institute was created, there was no place in which the chemist could meet his brother workers in other branches of science in order to formulate better means of preventing and eradicating disease. The eminent chemist, Dr. Julius Stieglitz, head of the Department of Chemistry of the University of Chicago, deplored the lack of peace-time co-operation among scientists in the field of health matters, pointing out that in times of national danger from war a great mobilization of scientists takes place in order to bring into existence destructive forces with which to fight the battles of men. Dr. Stieglitz expressed the belief that the chemists of the United States could contribute greatly to the conservation of health if organized for an all 'round campaign against disease and death. In this connection, in 1923 he said: "There is no institution in which the chemists of the United States can come together with the medical scientists to inaugurate a general attack upon the forces that kill. * * * Let there be another war, and, no doubt, the chemists would be mobilized again, but they would be mobilized to kill * * *."

Dr. Treat B. Johnson, Professor of Organic Chemistry of Yale University, Past President of The American Institute of Chemists, when testifying before the Commerce Committee of the Senate on the bill which brought the Institute into existence, pointed out the essential need for co-operation among all research experts in the various branches of science connected with plant and animal life, when he said: "* * * Nothing can be done, no attack can be made on any (health) problem, except through the application of the principle of co-operation. No one man today can cover any single field of science individually and make progress. He must work in co-operation with others* * *."

The National Institute of Health is the agency which Stieglitz had in mind—an institution where the chemist can work in close union not only with the medical scientists, but with disciples of every other science, giving them the benefit of his vast store of knowledge and adding to the sum of their usefulness in alleviating pain and preventing sickness. It furnishes the means by which can best be put into actual practice "the principle of co-operation," described by Johnson as being so essential to the success of the research expert.

When my bill creating the Institute was wrestling with reluctant forces in Congress for four long years, it was the *Chemical Foundation* and its wise President, Mr. Francis P. Garvan, which worked unceasingly for it and aided materially in securing the enactment of this law, justly called "the most forward step ever taken by the American Government."

Mr. Andrew Mellon, as Secretary of the Treasury, was asked for his opinion of the measure and his three reports thereon were most favorable. That of July 25, 1929, said: "The principles (of the bill) are meritorious, and I believe their enactment into law would be highly beneficial in the promotion of health and the saving of human life."

And President Hoover threw the whole of his powerful influence behind the bill, which I fear would otherwise have failed, for it was confronted with general indifference, one of the hardest conditions to overcome in a legislative body.

The act creating the National Institute of Health is a veritable declaration of war against all the forces detrimental to health on a greater scale than ever before attempted. It centers in the Nation's Capital all of the country's scientific resources for combating disease, and creates in Washington a clearing house of health for all the world, and the mighty contest against microbian hosts—the forces that kill—will be directed by one leader, the Surgeon-General of the Public Health Service, who is expected to become a veritable George Washington of Health.

The Chemist in the Textile Industry[1]

By P. J. Wood, *F.A.I.C.*

President of The American Association of Textile Chemists and Colorists.

In the past the textile chemist was relegated to some hole in the wall, or the attic of the mill, in quarters far too small and inadequately equipped to perform effective work. This was probably because the vital importance of this work passed unrecognized by the management.

Why was this so? In most cases it was a lack on the part of the chemist himself. He betrayed very often an unbecoming modesty, or, shall we say an unprofitable modesty? An inferiority complex; a lack of ambition to accomplish greater things; a fatal content with things as they are, coupled with a policy of *laissez faire* and "it's not up to me." He did small routine experiments laid out for him by persons in many cases far less capable than himself, and rendered scanty routine reports, uninteresting and unenlightening, without the slightest attempt at interpretation and without pointing out the practical application of his findings.

Was it any wonder that his work remained in the background? Was it surprising that he and his department received slight recognition?

He was an odd job man to whom were handed all the miscellaneous items which nobody else handled or knew how to treat. He was expected to be an expert "trouble shooter" for all departments; and it may be said to his credit that he very often performed apparent miracles.

Being thus regarded as a sort of "Jack of all trades," he came to be looked upon as "master of none;" and in many instances so considered himself, when instead he should be master of all. His work was thought to be somewhat mysterious, and when he retired to the confines of his laboratory nobody knew what he was doing, if anything, and apparently cared less. In many instances there was nobody who was qualified to supervise his work, and so it went unchecked, even the management being incompetent to pass upon his qualifications and the value of his work.

This gave rise to many abuses: first, many men not fully qualified were installed in places where the engagement of a good man could have been productive of worthy results; second, the holding of a position of this sort without adequate supervision requires that the incumbent shall be a conscientious chemist of the highest integrity. These two points strongly indicate the necessity of such an organization as The American Institute of Chemists aims to be.

At present a chemist seeking a position is dependent on his own efforts

[1] Address delivered before the New York Chapter on April 17, 1931.

to place himself. It is conceivable that a chemist eminently qualified by both education and experience for a certain position may fail in competition with the superior salesmanship of a glib talker with inferior qualifications. Then again, there is the matter of references from former employers, often so non-committal and impersonal as to breed positive distrust in the mind of a prospective employer.

How much better and how much more dignified it would be to be able to point to fellowship or membership in the A.I.C. with all that that should imply; to refer the prospective employer to the Institute for a record of the applicant's training, career, accomplishments, and character!

The function of the chemist in the textile industry is fourfold:

First: He must have a knowledge of the raw materials encountered in the manufacturing of textiles, comprising the fibers and fabrics; and also of all the materials used in any of the processes of manufacture.

Second: He must be familiar with the quickest and most up-to-date methods of testing and checking the chemicals used.

Third: He should assume control of all chemical processes.

Fourth: He must be able to initiate and carry out research work.

In order that one may undertake to fulfill all these requirements, it is essential that one shall have a thorough knowledge of all textile fibers; the sources from which they are obtained; the methods of preparation before manufacturing, and a general outline of the details of the processes of their manufacture into yarns or fabrics. It is necessary to be able to identify the various fibers chemically and microscopically, and to understand their conduct under the influence of chemical treatment, and their behavior toward dyestuffs.

The textile chemist should be familiar with the constitution of artificial coloring matters, and the role that this plays in determining their affinity for textile fibers, their solubility, and their fastness to various agents. The different methods of application of these dyestuffs is also an important study. A knowledge of the chemicals used in various processes is necessary, together with information regarding the different impurities commonly occurring therein. This information is often vital in order to explain irregularities in the various processes which may arise from this source.

The testing of chemicals is not nearly so important now as formerly, when there was a greater variation in the quality of chemical products delivered to the textile manufacturer, dyer, or finisher. Nevertheless, it is important that these should be checked from time to time, as mistakes are apt to happen; and, incidentally, this routine work is a valuable form of training for younger chemists in the laboratory. Dyestuffs are probably more likely to exhibit a lack of uniformity when the source

of supply may have been changed for some reason or other, but most dyestuffs from the same factory are now a days remarkably uniform in strength and shade.

Many of the processes carried out in the handling of textile fibers and fabrics must be controlled very carefully by the chemist. In many cases a great deal of ingenuity is required to devise a method of quick control which can be used by a foreman in the department so that there shall be no appreciable delay in the operation of the factory. It is essential, however, that these methods should be reasonably accurate and carefully carried out, and that they should be checked from time to time by the chemist, otherwise the matter of testing is likely to become simply routine and perfunctory. Accurate, written records should be kept of all tests made, and these records must be inspected at regular periods, otherwise the foreman is likely to think that the tests are unimportant and they may be slighted.

Some of the processes which should be chemically controlled in this way are:

Wool: Scouring, bleaching, dyeing, printing, and finishing.

Silk: Soaking before throwing, boiling off, weighting, bleaching, dyeing, printing, and finishing.

Cotton: Bleaching, mercerizing, dyeing, printing, and finishing, and the corresponding processes in the handling of *linen*, *jute*, *ramie*, *rayon*, *celanese*, *union yarns*, and fabrics composed of *mixtures* of all these fibers.

The fourth function of the textile chemist—research—may be divided into two parts:

1. Fundamental, or purely scientific research which may not be directly of commercial value.

2. Practical research which is directed toward the end of producing results that may lead to immediate commercial profit.

Fundamental research is carried out only by the most forward looking business organizations and probably always with the ultimate end in view that it may eventually prove to be of practical value. It is a great deal harder to sell to management than is practical research. It is nevertheless vital that fundamental research shall be conducted and it is possible that the textile industry is even now slowly awakening to the necessity of this work. Judging by the interest which has, so far, been displayed in the efforts of the newly organized *United States Institute for Textile Research* to establish a laboratory for this purpose, it would seem that the ideas of many earnest textile chemists may be realized in the not too distant future.

The Institute, which has been awarded a grant of five thousand dollars for development work, has undertaken to raise an equivalent amount of

money for the same purpose. It hopes to enlist the support, both moral and financial, of all public-spirited textile chemists, individually and also of the commercial organizations in the entire industry, to the end that fundamental research may be undertaken on a scale impossible to the individual chemist and to most individual units of the industry.

It is proposed to compile a record of all work already accomplished in this direction which has been made available through publication. It is further proposed to co-ordinate and correlate as far as possible all work of this kind being done in colleges and other public laboratories in the country. Laboratories which have not specialized in research work have been invited to co-operate and a gratifying response has been received. Many of the outstanding chemists of the country have joined the organization and committees of these men are actively engaged in formulating plans for the enterprise. There is no thought of profit making in any way, and the results of the work of the Institute will be published for the general good of all.

This is probably the very best way in which this very necessary work could be done, and it remains to be seen whether the textile chemists of the country and the industrial leaders who control the destinies of the textile industry will rise to the occasion and accept the privilege of taking part in this great work.

In the field of fundamental research a valuable contribution has been made by *The American Association of Textile Chemists and Colorists* with the help of its *thirteen hundred and fifty* members through the work of its Research Committee so ably headed by Professor Louis A. Olney of the *Lowell Textile Institute*. The Association has, for many years, maintained one chemist who is working in the Bureau of Standards and another at the Lowell Textile Institute, and this year has added another chemist to its staff.

The Association has formulated standard tests for the determination of the fastness of dyed colors on textile fabrics which have been adopted by the industry. At the same time it has sought the co-operation of the *British Society of Dyers and Colourists*, and the German *Echtheits Kommission* looking toward the adoption of international standards of fastness. Particularly outstanding is the monumental study of the behavior of dyed colors on exposure to sunlight which may eventually lead to a determination of the exact causes of fading. In the course of this study many abnormalities were noted which could not be explained, and these will provide a fertile field for further investigation.

The field for fundamental research is unlimited. To date, we know comparatively little about the constitution of even the basic materials; in spite of the enormous amount of work which has been done, much more remains to be accomplished.

Within a lifetime, artificial silk has been produced by the chemist, (although this is a misnomer, because its properties, with the exception of lustre, are entirely dissimilar to natural silk).

It is not without the bounds of reason to suppose that, at some future time, some ingenious chemist may discover a way to make artificial wool and a true artificial silk. And these two results may very likely come into being from a great deal of preparatory fundamental research. Practical research is being carried out in many commercial laboratories every day with the object of producing results of direct and immediate pecuniary benefit. It is designed for that purpose, and to justify itself must produce results. Such efforts are directed toward the production of new and hitherto unknown products, or toward the production of new effects as in dyeing, printing, etc. Also, the object at times is to obtain a higher quality of product, or the same quality of product at lower cost.

For a course of training required by the textile chemist, I should suggest: *General:* the equivalent of requirements for B.S. Degree; *Languages:* English, French, and German; *Sciences:* Chemistry: Inorganic, Organic—especially Color Chemistry—and Colloid), Physics; *Technology:* Dyeing (Tinctorial Chemistry), Engineering; *Business:* Business Administration, Personnel Administration, Psychology, and Salesmanship.

The proof of the value of the chemist in any textile organization, in the final analysis, lies in the chemist himself. In many cases, the chief executive is a commercial man rather than a technical man, inclined to look upon the chemist as an expensive and non-productive luxury, or at the best, a necessary evil. Therefore, it often becomes necessary for the chemist to devote part of his time to rendering reports of his work to such executives in a form that will be easily understood, and in such a way that the direct benefit of his work to the factory may be clearly shown. In other words, it is incumbent on the capable technician to bring forth his product in the first place, and then sell it to the management in the second place.

Naturally, this course is by no means necessary when the head of the concern is himself a technically trained man. Nevertheless, the necessity of regular and frequent reports from the laboratory is equally as important as the presentation of regular reports of production, for two outstanding reasons: First, to sustain the interest and sympathy of the management in this department, and second, to influence the forthcoming of the required appropriations to carry on the desirable experimental and research work, without which real progress is impossible.

A report of regular routine work is desirable, and the results of experimental work whether successful or not should be submitted, as it is often possible to learn valuable lessons from such unsuccessful attempts. It

is just as important to know what to avoid as it is to know what to do. For the same reasons the laboratory records should be carefully kept in very full detail in such a form that they may be easily referred to, in order to avoid duplication of effort. It would be fortunate if some clearing house could be instituted where such work could be recorded for the benefit of the entire industry. This would be of countless value and would undoubtedly make for progress. Of course, the ideal condition would be that the converting of textile fabrics, which, after all, is really a branch of applied chemistry, should always be in charge of chemists.

There is no good reason why this should not be so, and every reason why it should, except that, possibly, the average chemist is more interested in his science than in business. The romance of chemistry grips him, but the romance of business leaves him cold.

Why should this be so? Why would not business be the better for the direction of the orderly, methodical, trained mind of the chemist?

The qualities which serve to make a man a successful chemist are surely the very ones which should stand him in good stead in the conduct of any great business: the observing eye, the inquiring mind, attention to detail, methodical habits, patience, and the habit of reasoning.

The textile chemist may become eventually a better type of business executive if he will but add to his scientific and technical training the studies of industrial administration, psychology, and the handling of personnel.

Above all the cultivation of tact is indispensable to the textile chemist, as he is likely to be required to come in contact with a peculiar diversification of varied personalities both in the management and in the mill and the degree of co-operation he is able to command from both, may largely determine his success.

In closing, Mr. Wood quoted the following editorial from the *American Dyestuff Reporter:*

The Future of Chemists

A man well up in the chemical profession, some time ago estimated that.....a man graduating at the age of twenty-two will obtain $3000 at the age of twenty-nine, $4000 at the age of thirty-two, and possibly $5000 at thirty-seven.

If this is true, one can readily see that the average chemist who has to start in at the bottom and work his way up without influence or the inheritance of money or having been born to an important position, is bound to die a comparatively poor man, provided he lives a normal life, has an average size family, and properly educates his children.

The average chemist is expected to make a good appearance in public, pay annual dues to Technical and Fraternal organizations, contribute to the support of a church,

purchase books and journals pertaining to the profession, and contribute to endowment and research funds.

There may be a few self-made chemists driving Rolls-Royce automobiles, but not many. The average chemist dying at the age of sixty-five will be fortunate if he can leave an estate of $20,000 on earnings derived from his profession. It is one thing to leave money as a result of professional work and another to leave it as a result of inheritance or stock success. Many uneducated merchants would be ashamed to die if they knew they were to leave an estate of less than $20,000.

The average chemist in order to follow his profession must make use of laboratories and equipment furnished by others as he is not financially able to procure such equipment himself. He must give up the opportunity afforded in other professions for going into business for himself. Most of these professional men make far more money than the chemist.

Industry certainly owes a premium to the chemist for giving up the privilege of going into independent business, and should reward work well done with substantial salary increases. There are so many things to prove that the chemist is not paid according to value received from him that it is unnecessary to enumerate them. However, one chemist assisted in putting into operation a process that resulted in the plant saving several hundred dollars a day for the one line of work. In addition it enabled them to turn out a better product and get large orders on the work for several years. This chemist was not able to get an advance in salary as a result of this work. On the contrary, he even had the honor of having the superintendent give another man the credit for the work. Later on, this chemist saw a way to improve the product still further. A high-paid overseer, for selfish reasons, prevented the improvement.

At the present time there is no doubt that production men get higher pay than non-production men. In other words, if a chemist wants to make money he must abandon his laboratory. This is a sad state of affairs, but there is just a bit too much truth in it at present. If this same condition keeps on the industry will suffer. All the ambitious chemists will go into production work and only the mediocre will be left to carry on research work which has always been our mainstay for the advancement of industry.

Some steps should be taken to give the chemist an income proportional to his training and knowledge. The chemist must be able to answer intelligently any question concerning plant operations asked by the superintendents of slashing, dyeing, weaving, and finishing. All these men receive more than the chemist and they have only one line of work to be familiar with. The chemist has to mercerize, bleach, print, and dye samples of gray cloth so that when they are sent to the customers they represent something that can be reproduced in the plant. Such work necessitates an excellent knowledge of plant operations and processes and should put the plant chemist on an equal footing with a divisional superintendent.

The less we say of the unfortunate situation of the textile industry for the past few years, the better. However, the chemist and the technical engineer, with proper backing, can do more for the industry today than any other group of men. Mill owners still allow high-priced superintendents to purchase raw materials at exorbitant prices and thereby lose thousands of dollars yearly. Even a small percentage of this money would pay a chemist a salary comparable with that obtainable in other professions and still leave a large portion of the money as profit.

The trouble with the industry today is that it backs to the limit the rule-of-thumb, high-priced divisional superintendents who in many instances do not know the fundamental properties of their raw materials and yet do all in their power to prevent the chemist from putting these materials into use scientifically. This does not mean that

the chemist should replace these self-made superintendents. It means that the plant chemist should be on an equal with the superintendent in every way, including salary. When it comes to the management of help, the average technically trained man prefers to let some one else carry on. He prefers to be at liberty to carry on his experimental work and leave help management and carrying out of established processes to the superintendent. There should be room for both.

Mr. Neiman subscribed to what the speaker had said on the benefits of organization and co-operation among chemists, and said that:

The American Association of Textile Chemists and Colorists, of which Mr. Wood is president, has done more for textile chemists and textile chemistry than any other association in this country. At the time of its organization there were practically no textile chemists in this country. The textile manufacturers maintained that they could not afford to employ chemists because they themselves were making no money, and they were not aware of the fact that they were not making money because they had no chemists. After the formation of this Association, employers began to notice that this group of men really knew something; began to employ chemists and gradually built up the textile industry in America. Thus, this Association had a very decided and beneficial effect upon textile chemists and textile chemistry in this country. When Mr. Wood spoke of the benefits which would accrue through organization among chemists in general, he was undoubtedly speaking from his own experience in this older organization.

Dr. Crossley gave emphasis to what Mr. Wood said on salesmanship.

The idea is not to sell the Institute but rather to lift the profession of chemistry to the position to which it belongs. The chemist must learn to demand sufficient return for the service which he is to render.

In the first place the average chemist does not know what he is worth; next, he does not know the value of what he is producing. The product of the chemist has been dumped into the category of intangibles, along with good-will, for which there is no fixed value, and the chemist has allowed it to stay there.

Who is responsible? The chemist himself. The chemist actually produces assets that are just as tangible as those produced by the tool. A chemist can be evaluated just as a tool can be evaluated, and his product is subject to the same laws. There is no reason why the chemist's production should be continued to be regarded as intangible. When he realizes that, he will not be so eager to give all that he knows and has in order to interest prospective employers in his service. Every day the employer of chemists gets letters about like this:

"I can make: A, B, C, D, etc. I want $150 or $200 per month. I worked for the following firms. All you have to do is to show a bit of interest and I will come and tell you all I know."

How long will it be before a chemist realizes that what he knows is an asset? One man told me that if the chemist is not willing to give this information, he does not get the job. Go to a lawyer and see if he will give the information before he gets his fee! When the chemist learns that his knowledge has a definite concrete value he begins to see the necessity for chemists joining the Institute so that the force of numbers will compel society to give him full value in return for the service he renders.

Fees and Salaries; What Is a Chemist Worth?[1]

By Henry Arnstein, *F.A.I.C.*

No two men will agree on this subject. The fundamental law of compensation requires that compensation should be adequate, just and in conformity with supply and demand. Adequate compensation must take into consideration the many years of expensive preparation a chemist must spend and must be sufficient to give him an incentive for the future. It must be just from both the employer's and the employee's standpoint.

Many a young chemist is more of a liability than an asset and the compensation he receives must be in proportion to the value with which he enhances the safety and the profitable operation of his employer's business.

Supply and demand have a great deal to do with compensation because at any time when a large number of men are out of employment (especially if they are supporting families and have obligations), they will offer their services at a lower rate than the prevailing one. It is natural that at such times the compensation of the employed chemist will have a downward trend.

The employed chemist, when doing routine work, cannot expect a high salary. As a matter of fact, the routine work of a chemist in most plants is done by utterly ignorant people without any scientific training. This type of chemist is entirely out of consideration as far as the present discussion goes.

The chemist who is doing work of a varied nature, where knowledge and ability are required, naturally deserves a higher compensation, which will depend on the creative results a corporation obtains by its technical experts.

In my mind, in order for a chemist to increase his value and to assure himself of advanced compensation, he must do a great deal more work than is expected of him. He should not only supply the accounting department with facts and figures concerning the quality of the raw material, intermediates, and finished products, but he should also devote his energies toward improving the process used in the plant.

Any manufacturer, whose plant chemist will call his attention to new and cheaper methods of production, point out methods of reducing labor, overhead or fuel charges, or enable the company to utilize cheaper raw materials, to obtain a higher yield, to recover by-products and to eliminate

[1] Address delivered before the Pennsylvania Chapter on April 7, 1931.

waste, will consider him a valuable man and as such entitled not only to a liberal compensation, but also to a participation in the profits brought about by his knowledge and ability. A chemist should be a creative man instead of a routine man.

I was at one time chief engineer for the Krupps Company in Germany and again for the Fleischman Company in the United States. I have learned that satisfactory results and co-operation cannot be obtained from such workers whose hearts and souls are not in their jobs, who believe that they are exploited and whose interests run counter-current with that of their employers.

A large turn-over of labor—*i. e.*, a frequent change in positions—is costly both to the employed and to the employer. For this reason, as far back as twenty-five years ago, I successfully advocated that the technical employees of a large organization should be permitted to participate in the profits of the organization. I have been successful in inducing some companies to set aside a portion of their net returns for their employees, who, therefore, without the purchasing of stock, have become vitally interested in increasing the output, reducing the production cost, and improving the quality of the product. In such results the chemist stands foremost in any organization.

Naturally, there are chemists who are liabilities and there are chemists who are assets. I know of chemists, who, when employed in a plant, before they have thoroughly acquainted themselves with the processes employed or with the requirements of the trade, who have not yet learned the location of the fire escapes, are already recommending improvements of the processes, radical departures from established methods.

Frequently a chemist is a spiritual Bolshevik. He objects to things as they are, even when they are right. Frequently he is a dreamer, without any appreciation of commercial values. Many a chemist has thoroughgoing theoretical knowledge and knows how to produce sulphuric acid or diamido-azobenzol, but only in a laboratory and on a small scale. He does not know the market values of these products. In order to be truly successful, a man must not only produce a good and fast dye, he must also produce it at a cost which will enable his company to produce the commodity on a competitive basis.

One illustration should be sufficient to point out the importance of commercial training and ability in addition to chemistry. The chemistry department of a very large company having worked out a process by which wood waste could be economically converted into alcohol, persuaded the management of the organization to put up a large distillery for the utilization of wood waste. The place selected was Fullerton, La., which was unfortunate, from the point of view of both manufacturing and distribu-

tion. After a few months' operation, the plant had to shut down, because all of the wood waste available in the immediate vicinity was used up and it was prohibitive to import such a bulky raw material from a long distance. The location was also unfortunate for the finished product, because it could not compete with alcohol produced in New Orleans or at more advantageous plants. However, the chemist had the satisfaction of having evolved a process which would have been satisfactory if it had been applied in Portland, Oregon, or in Seattle, Washington.

My recommendation to the young American chemist, after leaving the university, is to specialize in a given branch of chemistry; to learn not only the chemistry and technology involved, but also the business end of his science. He should know the cost of producing a given dye and transporting to the consuming market; then he will be deserving of a larger salary than he is receiving at the present time.

The vast majority of European chemists, before leaving the university, make up their minds to go into a specified field, and they will not accept a position in any other field. If, for some reason or other, they are forced to change positions, they will seek employment only in their chosen field.

As a matter of fact, most universities in Europe are specializing—one in agricultural chemistry, a second in dyes, a third in pharmaceuticals, another in oils, etc. The graduate of one of those universities is truly an expert. He does not have to learn the foundations in practice, as our chemists do.

In Europe, a chemist will frequently go to a plant and seek employment for three, six, or nine months without compensation, considering the opportunity to learn to be worth more than his services. Such a specialist will always be able to command a higher salary and, when able to reduce the cost of production, recover the by-products, or introduce products into new fields of application, will always be assured of financial success.

* * * *

Chemical fees can be classified in three categories. One is fees for consulting chemists who are doing analytical work. In this branch of activity, the labor and knowledge involved can be clearly expressed in figures, as was outlined so excellently some time ago by our good friend, Eugene F. Cayo.

Where there is a definite knowledge of the work to be done and the time required, fixed fees can be agreed upon. Fixed fees can be established in industries where the work consists in making a definite number of visits and outlining a definite program for analysis of the raw materials, intermediates and finished products, where a man experienced in that particular industry can point out the weak points of the process.

The final and most important part of consulting practice is based on research. I refer to the truly expert consulting chemist or engineer who is not doing routine work, but who is trying to develop new methods of production or new uses for a commodity of which too much is being produced. I refer to what I call the *creative chemist*. To illustrate my point, a few years ago furfural was selling at ten dollars a pound; today, by utilizing agricultural waste, we could sell furfural at five cents a pound if a large enough market could be developed for it.

Another illustration is carbon dioxide. With the constantly increasing market for alcohol and with the daily increasing competitive sources, it became essential to recover the by-products in order to enable the manufacturer to compete with another manufacturer whose raw material was cheaper, or which frequently costs him no money at all.

Chemists who develop new processes or improve upon old ones, who develop new uses for old commodities or develop newer and better products for commerce in industry are entitled to a large portion or a representative share of the savings or revenue their research work made possible.

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Chemists should learn that their training requires as much time and knowledge as that of a lawyer or a physician. When professional cooperation is prevalent among chemists, their compensation will be on a par with that of these two professions. Very few physicians will listen to a sick man's ailments without adequate compensation; and although a lawyer may take a case to be paid only if the case is brought to a successful conclusion, that is the exception and not the rule. A chemist, however, will very often listen and give advice to a man without any compensation at all.

All of this tends to lower the position which a chemist should occupy from a professional point of view. I agree that a chemist has a right to offer his services on a contingent basis. We very frequently do that ourselves. Some of our clients are dubious that results could be obtained in certain well-known industrial applications. In such cases we offer the equipment or even services on a demonstration basis. If we do not obtain the specified results, they do not owe us anything, but if we are able to fulfill our guarantee, compensation must be forthcoming.

As a rule, however, a man of sufficient scientific and financial standing will be able to obtain a reasonable retainer when doing research work, even if the result of such work should be negative. Naturally, however, in such cases he must frankly state to his client that he is unable to guarantee or promise results.

The Personnel Classification Board: Its Function and Its Operation

By Ismar Baruch[1]

The *Personnel Classification Board* was reorganized last year following the passage of the *Brookhart Act* of July 3, 1930. By the original *Classification Act* of 1923, the *ex-officio* board members, namely, the Director of the Bureau of the Budget, the Chief of the Bureau of Efficiency, and a member of the Civil Service Commission, were authorized to appoint alternates to act for them in carrying out the provisions of the statute. From 1923 until 1930, accordingly, the operations of the Board were administered by three alternates, one from each of the organizations named.

Under the *Brookhart Act*, however, the *ex-officio* members of the Board are permitted to select alternates but are required to appoint a *Director of Classification* who is to have all of the powers and duties that the Board itself had under the statute. Accordingly, the *ex-officio* members appointed Mr. William H. McReynolds, formerly the Assistant-Chief of the Bureau of Efficiency, to be Director of Classification.

The major operation of the Personnel Classification Board consists of the allocation of all positions in the departmental service in the District of Columbia to their appropriate grades as defined in the Classification Act. This Act has important legislative features that control the administrative function of allocation for which the Board is responsible.

Congress has passed upon the general structure of the compensation schedules. It has determined the number of grades into which each classification service, such as the *Professional and Scientific Service*, is divided, the number of salary rates included in each grade, and the actual number of dollars involved in each salary rate. It was not feasible and, of course, not desirable, for the legislature to enact schedules so specific and detailed as to allocate definitely each individual position to a specific salary range, or each individual employee to a specific salary rate. Instead, Congress described in broad terms the level of importance, difficulty, responsibility, and value of work represented in each of the grades; laid down fundamental principles as guides for the interpretation and application of these broad grade definitions; and invested the Personnel Classification Board with the authority to develop the details of these grade definitions by means of class specifications, to determine initially and at any

[1] Address given before the Washington Chapter, February 27, 1931, by Ismar Baruch, Assistant Director of the Personnel Classification Board.

time during the life of the statute the grade in which any individual position or any class of positions falls, and to make revisions or adjustments in its determinations as to these allocations whenever the facts warrant. The decision of the Personnel Classification Board determines the range of pay applicable to a given position. This range generally consists of several salary rates. The specific salary rate to be received by an employee within the range of pay for the grade is a function of the head of the department in which the position is located and is dependent upon the advance in efficiency and usefulness of the employee and upon his length of service.

Thus, instead of legislating the precise pay for thousands of specific positions directly into a statute, Congress delegated to an executive agency the power of allocating these positions to grades or pay-levels in accordance with the very broad classification and compensation plans and principles set forth by Congress. Since the Board is empowered, on its own initiative, or upon the recommendation of administrative officials, or upon the request of employees, to make changes in the appraisals of positions whenever the facts warrant, and since it is always "in session" and its decisions currently effective, this method of fixing the pay of individual positions is believed to be immeasurably more practicable, equitable, and satisfactory to employees and administrators alike than one which requires a new operation of legislative machinery and a new statute every time that a reallocation of certain positions or certain classes or groups of positions is desired.

According to the basic principles of classification, the Classification Act itself requires equal allocations for equal work and the relationship between the grade allocations of any two positions (*i. e.*, whether one is higher, lower, or the same as the other) corresponds to the relationship between the duties and responsibilities of those positions as to comparative difficulty, importance, responsibility, and value. The Classification Act is not based upon the theory that workers of the same or equivalent qualifications should receive the same pay, for the reason that they frequently are not assigned to the same or equivalent work; the Government intends to pay for work performed—not for qualifications merely possessed by an employee but not used in the service. Allocations of positions are not made on the basis of the characteristics of the employees occupying them, but on the basis of characteristics of the work actually performed and responsibilities actually borne.

The Board is given full authority to appraise the assignments or duties and responsibilities of an employee and to compare them with those carried out by another employee, to the end that there shall be equal allocations for equal work. It is not, however, given authority to appraise

the qualifications of any employee of the Government. That is a question over which the various departments and the Civil Service Commission have control. Therefore, when the Board appraises a position and allocates it to a given grade, it does not appraise the employee nor allocate him and his qualifications to that grade. The Board's allocation of a position does not characterize the employee who happens to occupy it at the time as a *P-3* chemist, or a *CAF-2* stenographer, but characterizes the duties and responsibilities which constitute the position as *P-3* or *CAF-2* duties or assignments.

The Classification Board has made serious efforts to adjust some of the inconsistencies occurring through the unforeseen effect of the *Welch Act*. Although considerable progress has been made and will continue to be made, the enactment of the compensation schedules recommended by the Board in its closing report of wage and personnel survey recently submitted to Congress will furnish the most satisfactory solution. Existing compensation schedules are so written as to indicate that the classification *P-6* is the highest grade that an individual research chemist generally may occupy; and that *P-7* research positions not involving responsibility for the direction of the research of others exist but are very few in number. Executives, such as Bureau Chiefs, may occupy *P-8* positions. *P-9* positions are those of any nature, research or administrative, for which Congress specifically fixes a salary in excess of $9000 a year. In the absence of such specific legislation, the Board is not authorized to allocate any position to *P-9*. According to the new schedules recommended to Congress by the Personnel Classification Board, individual research workers may clearly be allocated to *P-7* if their positions are of sufficient difficulty and importance.

It is a regular part of the Board's work to reclassify positions on the presentation of sufficient evidence that the duties or responsibilities of the position have changed. This change may be due either to a formal action by an administrative official in changing an employee's assignment, or it may be due to the gradual growth of the position as the employee advanced in knowledge and technique and is able to perform more advanced work with less supervision. Lessening of supervision is in effect one aspect of increase in responsibility, and this is as much a change in the position and the elements of which it is composed as a formal reassignment that would be more tangible in character. It is often very difficult for the Board to obtain correct and pertinent facts as to the intangible elements constituting a change of importance, difficulty, or responsibility in a position because witnesses are often not familiar with the factors entering into the analysis of such a change, and may at times overlook the particular facts upon which the Board's decision would turn.

The *Closing Report of Wage and Personnel Survey* which was recently submitted to Congress contains several chapters which would give one a good knowledge of the basic principles and concepts upon which the work of the Board rests, and of the factors entering into the allocation of positions. This report may be obtained from the *Superintendent of Documents, Government Printing Office, Washington, D. C.*, for thirty cents a copy. This report is an example of a research project in personnel administration carried out by the Board, which resulted in important recommendations to Congress for constructive legislation.

Another project of the Personnel Classification Board affecting positions in the District of Columbia is the study of various groups of positions to determine, and to set forth in writing, the factors to be considered in differentiating among them. Organizations such as The American Institute of Chemists can play a very important part in the study of scientific positions. However, this work requires the investigation of facts, possibly with the help of the Board's trained investigators, and the desired results cannot be secured without first finding out the characteristics of the positions actually in existence in the scientific bureaus and laboratories.

In conclusion, Mr. Baruch invited the Chapter to form a committee and join the Bureau in its work on this project. The Washington Chapter of the Institute, of course, is working as a part of their plan of classification to make it possible for a research man to occupy as high a position as an executive, believing that under present conditions a good research man may have to go into an administrative position for which he, perhaps, is unfitted, if he wishes to advance.

An hour's discussion followed the talk, during which time Mr. Baruch cleared up many obscure points and shattered some fixed ideas. One of the most interesting of these was the idea held by many chemists that a position must be subjected to a fifty per cent change in duties in order to be reclassified. Mr. Baruch stated that there was no policy or regulation of the Personnel Classification Board to this effect; that, in fact, in the nature of things any fixed percentage requirement of this sort is unsound classification theory, and that under given circumstances, examples of which he explained, a change of duties relatively minor as to time involved might be such as to require a major advance in the difficulty or complexity of the work performed and in the qualifications required of any incumbent of the position, and therefore would result in reclassification.

New Hazards for the Chemist

By Max Trumper, *F.A.I.C.*

The advances in the manufacture of synthetic chemicals on a commercial scale have been rapid and spectacular. This country is reputed to lead the world in the perfecting of efficient processes and in the production of new chemicals. This continuing creation of new organic compounds, some of which are promptly used as industrial chemicals, exposes the chemist in the laboratory and the factory to hazards the nature of which we do not understand. The industrial physician as well as the chemist in industry should therefore scrutinize these new chemicals to ascertain their possible toxicity before many workers shall have been exposed.

Before the World War we depended on research in Germany for toxicological data in industry. Now that the universities in that country can no longer afford to continue their thorough and elaborate animal experiments on the new industrial poisons, these data are no longer available. In this country, instruction on the fundamentals of toxicology is seldom given to students of chemistry. We have been too busy with the more immediate problems of manufacture, of making the new products commercially profitable. In the meantime our chemists are being exposed to fumes and vapors of unknown or uncertain toxicity. Thus the chemist who contributes materially toward the advances in modern civilization may also be the first to suffer from the harmful effects born of the progress which he has made possible.

One of the gas hazards to which many industrial chemists may find themselves exposed is that of synthetic methanol. Owing to its low cost, many industries will use this methanol for the first time in large quantity. Other industries, whose chemists have been familiar with the danger of crude methanol, may now welcome synthetic methanol because it has no impurities. But herein lies a new danger—synthetic methanol cannot be readily identified by its odor. Crude wood alcohol contains much acetone, some ethyl methyl ketone, methyl and dimethyl acetate, furfural, allyl alcohol, and other substances which give it a very disagreeable odor, which acts as a warning agent. Such a warning is absent in the synthetic product, making it all the more insidious.

Fortunately several of our progressive states have occupational disease compensation laws and these necessitate the collection of data which yield valuable information as to the frequency and nature of the cases of industrial poisoning. This makes available for the chemist and the industrial physician the extent of the danger from both the old and the

new sources. Our own state of Pennsylvania which ranks high in the number of industrial chemists employed, has no legislation providing for compensation in the case of occupational disease or industrial poisoning. Thus we chemists in Pennsylvania are without the legal protection afforded to our fellow chemists in Massachusetts, Connecticut, Wisconsin, North Dakota, California, New York, New Jersey, Ohio, Illinois, and Minnesota. When a new compound of possible toxicity is introduced in industry, we have to learn its effects by the trial and error method and often at the sacrifice of life.

As an illustration of a possible gas hazard which the industrial chemist may encounter in the near future there is the new vulcanizing agent known as 1, 3, 5-trinitrobenzene. This superior vulcanizing agent was exhibited by the U. S. Bureau of Standards at the recent meeting of the *American Association for the Advancement of Science*. It is urgently needed in the manufacture of electrical cables and wire coverings to replace the troublesome and corrosive sulphur. Trinitrobenzene, when it enters industry, must receive careful study and will bear watching by both the industrial chemist and the industrial physician. This compound is similar to TNT. We know that the nitro group in the aromatic series always increases toxicity, but it is not necessarily true that an increasing number of nitro groups increases toxicity. The nitro-compounds attack the blood and have a direct action on the central nervous system, especially on the optic and auditory nerves. To my knowledge, we have no experimental data on the toxicity of trinitrobenzene—but dinitrobenzene is recognized by authorities as "the most troublesome compound used in coal-tar manufacture."

For self-protection, therefore, as well as for the welfare of the profession, the chemist in industry should familiarize himself with the fundamentals of industrial toxicology so that he may be in a measure prepared not only for the hazards which he knows to exist but also for those which may be lurking in the new processes and new compounds which he must handle. In the discussion of this subject at a meeting of the Philadelphia Chapter of the American Institute of Chemists, Dr. Hiram S. Lukens moved that we report to the national organization our desire that the Institute approach the American Medical Association for the purpose of co-operating in the study of this common problem. This motion was carried and the writer hopes earnestly that it may lead to a united effort on the part of both professions to safeguard those persons in the laboratory and in the factory who are being exposed to the effects of new compounds not yet proved to be innocuous.

The Placement of Chemists in 1931[1]

Fortunately the fates have decreed that the profession of chemistry should be less affected by the present business depression than some of the others. Conservative estimates place the number of chemically trained people who fall within the professional class at less than ten per cent of the total number. In contrast to this, the engineering professions report unemployment within their ranks running as high as two to three times this proportion; and the general unemployment in the country is probably half again as great as among chemists.

Statistics, however, are coldly comfortless to the man whose door is besieged by the wolf and whose sense of security has been seriously disturbed by either actual or prospective stoppage of income. For that reason none others will be included here.

It is my purpose here to point out what seems to me to be the only really logical method of handling the existing situation, and that is by centralization. There are jobs to be had and there are men to be had to fill them. Where one industry or one section of the country is over-supplied with men of particular training and experience, another needs the surplus. Where one industry or organization is so hurt financially that it is forced to release personnel, another is able to strengthen itself by taking on men of training to make its staff complete.

These readjustments are going on continually now and they are creating real opportunities for both employees and employers. The problem for all concerned has become one of finding and fitting. Such a situation cannot be met by haphazard methods. The chances of getting a man into the niche that fits his particular abilities or in plugging a gap with just the right kind of a man may be calculated by our mathematically inclined brethren and when so calculated the result is too discouraging to contemplate. Too much haphazard filling of openings, I venture to say, is most largely responsible for the present unemployment in our profession.

It is obviously so for we now have the highly anomalous situation of employers discharging and hiring men at the same time. The financial depression is being used as a means, an excuse if you will, for removing misfits, and the reservoir of trained men thus created is being drawn upon to supply others who will fit. In such a situation the exactness of the fit is above all important and this can only be obtained by the most careful selection on both sides. Such precise choice can only be obtained if both men and employers can meet at a central point where inquiries from both

[1] Address delivered at Indianapolis before the Division of Chemical Education by D. H. Killeffer, Manager of *The Bureau of Employment of The Chemists' Club.*

can be matched up properly. A classified reservoir of experience of all kinds is essential. Teachers, executives, research men, and all the other multifarious kinds of people needed must be made easily available.

Discouraging as the present situation must seem to anyone unemployed, there is in it much ground for optimism, for the ultimate result all around is sure to be helpful. In the painful process of adjustment we have the shifting of men who should teach into their proper and comfortable sphere of activity, and of men who can only be happy and really useful in industry into their proper fields.

From the employers' point of view, the present is a bargain sale of experience, and wise executives are taking full advantage of it. By that it is not meant to infer that experience is being sold in a depreciated market at low prices but rather that experience is now to be had which is not often in the market at all. In general it seems true that experienced men are able to command salaries which are fully commensurate with their abilities and not seriously lower than they would be ordinarily. It is also very definitely true that such men are being actively sought and, far from being a disadvantage, a demand for a satisfactory salary is more often than not a distinct advantage to the man. When the right man is found the matter of salary is necessarily secondary to the employer.

For the man without experience the picture is not so bright. The young graduates of the past two or three years are finding it unusually difficult to place themselves in competition with experience. Salaries for younger men are being cut to the barest living wage, and while their ambitions tower above their present abilities to earn, many—far too many—would rather pass up opportunities to gain needed experience and to acquire essential ability than to pocket their pride and accept what they can get.

Such sophistries as "accepting a position" are well enough within college walls, but the hard-boiled employer changes that to "getting a job" when the student is once outside of the campus gates. One cannot censure the teacher for imbuing his charges with the nobility of their chosen calling nor can one expect a short few years of college training to create common sense where it does not exist, but one certainly can wish that the awakening to reality many of us have gone through, and many more are facing, could be made less rude and unpleasant.

The real solution to the present problem of employment for chemists lies definitely in the direction of united and concerted effort. If that is accomplished, as it can be by utilizing agencies already functioning, the problem vanishes like moisture in a sulphuric acid bottle.

Acknowledged with Thanks

Several members called attention to the following editorial which offers an answer to the question raised in *The Members' Forum* in February:

Compensating Changes

Faulty emphasis has been placed upon the swift rate of progress that has characterized chemical development since the World War. Chemical operations, always mysterious to the layman, have roused his suspicion, and the notion that chemical progress is a dangerous destroyer of values has of late spread widely.

All progress is destructive. Every improvement means a replacement. The destruction of the indigo plantations by the synthetic dyestuff is only a little more dramatic because of its speedy accomplishment, than the banishment of the horse from our city streets or the passing of clipper ships from the high seas. Moreover, there is almost always a curious compensation in chemical improvements, a transfer of values, a change in uses.

A generation ago the petroleum industry had for its chief product kerosene, replaced to illuminating gas, in turn largely replaced by electricity. But these replacements have each been followed by substitutions that have made the petroleum and the gas industries greater than ever. Celluloid, sorely beset by a half dozen other plastics, has lost many of its markets, only to find a new and fast growing field in the manufacture of laminated glass. Carbon in the automobile batteries disappeared with the coming of the magneto, to find a new place in the radio, only again to be driven out by direct connection, and again to find a new use in the carbo-electrons of the talking pictures.

One of the most distinguishing characteristics of chemical progress is its ceaseless searching for better and cheaper materials. Every new chemical development opens anew the vast and complicated problem of raw materials and by-products. The result is a constant shifting and switching of markets; but the closing of one outlet is usually accompanied by the discovery of some other field of consumption, and rapid as these changes appear to the outsider they seldom come so unheralded that the alert chemical manufacturer cannot anticipate them. Natural products are replaced *in toto* by chemical substitutes; but within the chemical field proper such revolutions always result in a net gain to the industry.—*Chemical Markets*

Some editorial observations on the hardy perennial confusion about chemists and druggists:

An Idea That Dies Hard

"Brantford Druggist Gives Address in New York." Such is the heading of a news item appearing recently in one of Canada's leading daily papers published in Montreal. Since the "druggist" who made the address happens to be the President of the Canadian Institute of Chemistry, the slip has aroused the comments of chemists throughout the country. Nothing in the item, as received by the press from their wire service, indicated that the President of the Institute was a "druggist." In fact the words "chemistry," "chemist," and "Institute of Chemistry" were used correctly. When it came to setting up the heading of the news item, which was the contribution

of the editorial staff of this particular paper to the matter, the "chemist" became the "druggist."

What such an accident shows is that the profession of chemistry still requires a great deal of publicity of the right kind. It is necessary to go back to the beginning and explain in the simplest terminology the difference between work done by "chemists" and "druggists." In this, it should not be impossible to secure the co-operation of "druggists," since it cannot be their desire to permit the "chemists" of the country to assume the position of registered pharmacists in the minds of the public. In England, the British Institute of Chemistry has brought forward a new term, "chartered chemist." The confusion in the use of all these designations is even greater there than here.

At one time the number of registered pharmacists greatly exceeded the number of professional chemists, but it would not be surprising if soon the position were reversed so that from a numerical standpoint "chemists" would be in a strong position to demand a positive legal right to the use of their name. In the meantime, no one really disputes their claim, although it is regrettable that general public education has not yet proceeded to the point where individuals in charge of front pages of leading dailies do not know the difference or distinction.—*Canadian Chemistry and Metallurgy*

Also from across the border comes the following editorial:

The City Chemist

Ottawa is considering a return to the status of a corporation employing a chemist. The local discussion aroused in the national capital makes it opportune to consider the extent to which chemists are needed or used by municipalities.

Engineering and medical services are established and known to be absolutely essential. A city cannot exist as an efficient or healthful unit except under such professional direction and management. A chemist is recognized as a definite necessity in the larger cities, but only in some cases is he ranked with engineers or the other professions in the service. Where trade wastes have been a particular nuisance, and where chemistry is known to relate to something other than water or sewage, chemists have found greater opportunities and have attained high recognition.

The public has learned to be very careful about its water supply, and to the extent to which the chemist contributes to the safeguarding of health, he is readily admitted as a useful person. Gases present from the decomposition of organic material or through leakages are frequent causes of explosions; and on such occasions it is the chemist rather than the engineer who is expected to determine risks because of his special knowledge of gas mixtures.

When it comes to the smoke nuisance, garbage disposal or utilization, most cities prefer to study what has been done elsewhere and adopt regulations or copy systems. In fact, it is one of the characteristics of cities and city councils that they must not be too original but must rather travel and observe what has been done elsewhere. All this contributes to the somewhat slow development of the scientific services within any particular corporation.

A few cities have found that the presence of competent industrial chemists on the staff makes it possible for them to deal much more intelligently with technical and business matters arising through the establishment of industries. In other words, the chemist can function at times as an assistant Industrial Commissioner. Usually the City Treasurer finds his chemical and physical laboratory of the greatest assistance to his purchasing department.

There is no school for city chemists; but it is evident that a particular combination of experience, coupled with the right type of natural ability, should result in the development of an executive who could be of extraordinary worth to three or four major divisions of city management.—*Canadian Chemistry and Metallurgy*

Excerpts from an account of the Annual Meeting of the *Proprietary Articles Trade Association* in New York:

Training of Pharmacist

Mr. Lewis described in detail the practice of pharmacy in Great Britain and called attention to the advances made in pharmacal education since the World War. The Pharmaceutical Society of Great Britain, he said, is a semi-governmental institution acting under the act of Parliament which brought it into existence. The society controls the education and registration of pharmacists, and to some extent the sale of poisons. Up to the time of the War it had sole control over the sale of poisons.

The speaker described the English method of training pharmacists. After serving two years (4000 hours) as an apprentice, the potential pharmacist enrolls in one of the various approved schools of pharmacy. After completing the year's work, the student takes the "minor" examinations and, if successful, passes to the advanced, or second year class. Upon completion of the second year's work, the candidate takes the major examinations and, if successful, is declared to be a *Chemist and Druggist*. A qualified *Chemist and Druggist* may go to school for an extra year, pass the examinations and be declared a *Pharmaceutical Chemist*.

Chemists' shops, outside of London, Mr. Lewis said, still utilize shelf ware and shop drawers to call attention to the business of the establishment. These chemists, he said, are held in high esteem by the public in general. The most profitable side-line of chemists' shops is the sale of photographic materials. Other profitable side-lines include the sale of cosmetics and the fitting of eye-glasses. Except for the sale of medicines, chemists' shops must close at specified times according to the provisions of the shop hours act.—*The Pharmaceutical Era.*

The following clipping indicates a possible addition to our tentative list of articles on *Chemistry—a Means to an (Unsuspected) End:*

Chemical Training Big Asset to Rockne

Perhaps few of our members know that Knute K. Rockne, Notre Dame's famous football coach who met his tragic death in an airplane crash during the week of the meeting of the AMERICAN CHEMICAL SOCIETY in Indianapolis, was at one time a member of the SOCIETY, being listed in our first Directory. In the opinion of Father J. A. Nieuwland, Rockne's mentor during his school days and a close personal friend of the coach, Rockne undoubtedly owed much of his prowess as one of the greatest coaches of all time to his training in chemistry, which taught him the method of reasoning.

—*News Edition, J. Ind. and Eng. Chem.*

The National Council

The seventy-ninth meeting of the Council of the American Institute of Chemists was held at The Chemists' Club, 52 East 41st Street, New York, N. Y., on Friday, March 27, 1931.

President Dr. Frederick E. Breithut presided. The following councilors and officers were present: Henry Arnstein, E. F. Cayo, W. M. Grosvenor, J. F. X. Harold, K. M. Herstein, F. Kennedy, H. G. Knight, D. F. J. Lynch, F. W. Zerban, F. W. Zons.

The President appointed Mr. Herstein to act as Secretary *pro tem* in the absence of Mr. Neiman, Secretary.

The minutes of the previous meeting were approved as submitted.

The Treasurer's report as of March 27, 1931, was read, showing a cash balance of $3,031.08; accounts receivable, $105.00; bills payable, $279.33.

Mr. Lynch reported from Washington that arrangements are progressing to a final conclusion for the Annual Meeting and Medal Award. The Headquarters of the Institute will be at the Carlton Hotel in Washington. The Board of Directors and the Council of the Institute will meet at 10:30 A M. The luncheon and medal presentation will follow at 1 P. M. The annual business meeting will be held in the afternoon.

Letters were read from the Public Relations Committee, Miss Wall, and Dr. Sachs, regarding the policy of *The* CHEMIST. Suggestions of the Public Relations Committee regarding the policy of *The* CHEMIST and alterations in its cover page were approved. The suggestion of the Public Relations Committee that an advisory board for *The* CHEMIST be appointed was approved and the list of names submitted by the Committee was referred back to us for further consideration.

Mr. Quigley's report as Chairman of the Committee on Membership was accepted by the Council.

A letter from M. W. Ranks was referred to the Committee on Public Relations for further information.

The list of nominees for Councilors was approved and the Secretary was directed to send ballots to the membership.

On motion duly made and seconded the President was authorized to appoint a Committee to select candidates for honorary membership in the Institute. The President appointed Dr. Crossley to be Chairman of the Committee with authority to select other members.

The names of those elected to membership are on page 305.

Respectfully submitted,

March 27, 1931 K. M. HERSTEIN, *Acting Secretary*

News of the Chapters

New York

The sixth regular meeting of the 1930–31 season was held at The Chemists' Club on the evening of Friday, March 6th. Following the dinner, which was served in the main dining room of the club, Mr. E. T. Sterne, President of the Canadian Institute of Chemistry, delivered an address on *Chemists and People*. See page 260.

Mr. Sterne is Managing Director of G. F. Sterne and Sons, Ltd., of Brantford, Ontario. From his background as an industrialist, likewise from the viewpoint of his key position in the Canadian Institute of Chemistry, he reviewed the professional outlook, past and present, of chemists in the Dominion of Canada.

The public relations problem of the chemical profession, and of the chemical industry received especial attention from the speaker. Mr. Sterne's paper was discussed by Dr. Frederick E. Breithut, President of the American Institute of Chemists, and professor and head of the Department of Chemistry, at Brooklyn College; by Mr. Albert K. Epstein, of Epstein, Reynolds, and Harris, Chicago, Illinois; by Leon V. Quigley, Technical Editor of the Bakelite Corporation.

The meeting adjourned at 10:15.

The seventh regular meeting of the 1930–31 season was held in the main dining room of The Chemists' Club on the evening of Friday, April 17th.

Mr. Frederick J. Kenney presided; the meeting was attended by about seventy members and guests. The guests of honor at this meeting were: Dr. L. V. Redman, President-Elect of the American Chemical Society; Dr. J. B. Churchill, Consulting Chemical Engineer.

Following the dinner, Mr. P. J. Wood, President of *The American Association of Textile Chemists and Colorists*, Vice-President of the *Oriental Silk Printing Company*, and Director of the *U. S. Institute for Textile Research*, delivered an address on *The Chemist in the Textile Industry*.

For Mr. Wood's masterly and timely presentation of his subject, see page 271. His address nicely reflected extensive experience in the textile industry, and an interest in the professional status of chemists—quite natural in the president of one of the great chemical societies. His consideration of the work of chemistry, as a profession, its remuneration, and opportunities, was expertly penetrating and logical. He emphasized the importance of a broad outlook, even for chemical specialists, and developed the point that professional organization, and the generalization of knowledge of the true worth of chemical service are essential to the establishing of

correct understanding of the value of the chemist in present-day America.

Mr. Wood's paper was discussed by Dr. M. L. Crossley, Chief Chemist of Calco Chemical Company; by Dr. J. F. X. Harold, Consulting Chemist; by Mr. Howard S. Neiman, Editor of *Textile Colorist*, and National Secretary of the Institute; by Mr. Max Grunbaum, Consulting Chemical Engineer; by Mr. Frederick J. Kenney, Chief Chemist of the Department of Purchase of the City of New York.

Dr. J. F. X. Harold, Chairman of the Nominating Committee, presented the following list of nominees for election at the Annual Meeting of the Chapter on May 1st:

Chairman—Frederick J. Kenney, Daniel P. Knowland.

Vice-Chairman—P. J. Wood, T. Robert Schweitzer

Secretary-Treasurer—Leon V. Quigley, Raphael Frank Revson.

Representative—Karl M. Herstein, L. R. Seidell

Councilors (3)—Otto P. Amend, Herschel I. Eisenman, A. Willard Joyce, J. W. H. Randall, George Schneider, Florence E. Wall

Miss F. E. Wall, Editor of *The* CHEMIST, conveyed greetings from Chicago members of the Institute.

Before adjourning the meeting, Mr. Kenney informed the local membership of further details concerning the national meeting, which is to be held at Washington, D. C., on May 9th, and suggested that members of the New York Chapter make particular record of this date so that attendance by a large delegation will be assured.

Respectfully submitted,
LEON V. QUIGLEY, *Secretary*

Pennsylvania

Instead of the regular monthly meeting, a number of members and their wives met for luncheon at Holland's Restaurant on Saturday, March 7th, at 1 P. M. We then went to the Pennsylvania Museum of Art—where a very interesting and instructive lecture was given by Dr. Rossiter Howard, curator of education at the museum.

Our party was permitted to visit a portion of the museum which has not yet been officially opened to the public. Among the magnificent exhibits were the Medieval Cloister in Romanesque architecture, which had been brought from Spain. It was built in the eleventh century by the Benedictines and later destroyed by the Saracens. The cloister has been rebuilt in the museum but in smaller form than the original. The blue ceiling and lighting system represent the twilight sky, and the exhibit lacks only the shrubbery which will give it the natural setting.

The Guelph Treasure taken from the Cathedral at Brunswick—founded by St. Blazius during the

eleventh and twelfth centuries—was next explained.

We also saw a church façade of the 12th century, a sculpture that might be of Richard Coeur de Leon, and a fresco from the 13th century.

Dr. Howard pointed out a Crusader on a mount. He told us that the armor of Maximilian—dated 1490—weighs about 80 pounds and was so constructed as to deflect the thrusts of the spear.

The collection also contains a Gothic Chapel, dated 1400, with sculptures and windows of the Abbey of St. Denis at Paris; and scenes from the Crusades, illustrative of German art in the Middle Ages. These sculptures are lent to the museum by the courtesy of Mr. Raymond Pitcairn.

There was also a hall of a French Chateau with its beautiful carvings and a canopied dais, upon which rests the chair of the master of the house.

The visit was arranged through Frank M. Jones. Dr. Porter, on behalf of the Chapter, thanked Dr. Howard for his very interesting talk. The chapter owes a debt of gratitude to Dr. Fiske Kimball—the director of the museum—for the courtesy shown us.

The Chapter met at the Engineers' Club on April 7, 1931, with Chairman F. D. Jones presiding. Mr. Cayo reported on the proceedings of the last Council meeting.

Mr. Chapin, Chairman of the Membership Committee, reported that two new members have been added to the chapter.

Dr. Arnstein read the report of the Nominations Committee, suggesting the re-election of the present officers for the coming season. It was unanimously carried, so the chapter officers remain as follows: *Chairman*, Franklin D. Jones; *Vice-Chairman*, Eugene F. Cayo; *Secretary*, Benjamin Levitt; *Treasurer*, William Berry.

Dr. Trumper suggested that the chapter do some radio broadcasting to acquaint the public with the chemist's work. It was decided to await the report of the national committee which is considering ways and means of public relations in general.

Howard Stoertz was appointed official reporter for the chapter.

Dr. Arnstein addressed the Chapter on *Fees and Salaries: What Is a Chemist Worth?* (for full account, see page 279).

Respectfully submitted,
BENJAMIN LEVITT, *Secretary*

Washington

The regular meeting of the chapter was held on March 24th. The meeting was called to order at 8:15 P. M. by Chairman Lynch. Eighteen members and one guest were present.

The minutes of the previous meeting were read and approved. The Treasurer's report was made by C. E. Senseman.

The election of officers for the

ensuing year was held with the following results:

Chairman, Daniel F. J. Lynch
Vice-Chairman, Louis N. Markwood
Secretary, Colin W. Whittaker
Treasurer, Cornelius E. Senseman

Dr. C. E. Munroe was unanimously elected Honorary Chairman.

Plans were discussed for the dinner meeting to be held on April 23rd. On this occasion Dr. C. A. Browne, Assistant Chief of the Bureau of Chemistry and Soils, will address the chapter informally on *The Status of the Chemist in Europe*, drawing from first-hand, recent observations made during more than a year's travel in Europe and the Near East.

Mr. Keohan of the Chemical Foundation was present to lend his aid and advice in making plans for the Annual Meeting of the Institute on May 9th. The Chair appointed the following committee to make all the necessary arrangements for this meeting: James F. Couch, *Chairman*, Knight, Herrick, Senseman, McBurney, Mehring, Diner, Peterson, Reid.

After considerable discussion, the reporter was instructed to forward a statement to *The* CHEMIST outlining some of the sights worth seeing and the laboratories worth visiting in Washington, with a request that the Washington Chapter be advised as to what the visiting members wish to see while in Washington.

On motion the meeting adjourned.

Respectfully submitted,
O. E. May, *Secretary*

During the *Students' Course in Industrial Chemistry*, at the forthcoming Exposition of Chemical Industries, lectures will be given by Dr. M. L. Crossley on *Chemistry as a Career;* by Dr. Neil E. Gordon on *Training Chemists in the Universities;* and by Dr. William M. Grosvenor, on *The Chemist as an Expert Witness.*

For those interested in Scientific Detection, we note the following books—both by chemists—just published in England:

The Scientific Detective and the Expert Witness. By C. Ainsworth Mitchell, D.Sc., F.I.C., Editor of *The Analyst.* This is a complete revision of an earlier book, brought right up to the minute, "...full of deep interest as well as of scientific fact...."

Some Persons Unknown. By Henry T. F. Rhodes, Editor of *The Chemical Practitioner*, formerly Secretary of the *British Association of Chemists.* A book written in less formal and more popular style, with an interesting preface on science as an aid to police methods by Edmond Locard, director of the police laboratories at Lyons, France.

Personals

JEROME ALEXANDER has recently been decorated by the French government, and awarded the designation of *Officier de l'Instruction Publique*.

WILLIAM D. BOST of Chicago, has been elected President of the Orange Crush Company.

MARSTON T. BOGERT recently addressed the Rochester and the Lehigh Valley Sections of the A. C. S. on *Some Interesting Recent Developments in the Perfume Field;* and the Society of the Forty-Niners on *Science in the Interest of Peace.*

HORACE G. BYERS, Past-President of the Institute, and now Chief of the Division of Soil Chemistry and Physics, Bureau of Chemistry and Soils, will deliver a course of lectures on *The History of Chemistry* at the University of Washington, at Seattle, during the summer session of 1931.

Dr. Byers was head of the Department of Chemistry in the University of Washington from 1899 to 1919.

VICTOR COFMAN, formerly Research Chemist with E. I. duPont de Nemours at Wilmington, Del., and now living in England, is to give a course of three public lectures on *The Biophysical Chemistry of Colloids and Protoplasm*, on May 4th, 11th, and 18th, under the auspices of the Botany Department of King's College, University of London.

NEIL E. GORDON demonstrated and lectured on the practical applications of sound films in *The Adaptation Method of Teaching Chemistry*, before the Division of Chemical Education at Indianapolis.

HORACE T. HERRICK, principal chemist in charge of the Color and Farm Waste Laboratory, gave a talk entitled *Development of the Chemical Application of Microorganisms* on April 3rd, before the Purdue Section of the American Chemical Society.

After CALM HOKE'S ingenious "Garrote for the Garrulous" (first announced in the *News Edition* of *Industrial and Engineering Chemistry*, March 20th) was described in *The Indianapolis Times*, an envious reporter from another paper called up to ask if she had brought a working model with her, and if so, could he please see a special demonstration.

BENJAMIN R. HARRIS, of Chicago was host at dinner on April 8th, to several Institute members; the guests included Jay Bowman, Bertram Feuer, Raymond Hertwig, Calm Hoke, Wolf Kritchevsky, John M. Nicoll, and Florence E. Wall.

LEON V. QUIGLEY will deliver an address at the forthcoming Exposition of Chemical Industries on *Technical Advantages and Characteristics of Phenol Resinoids.*

THE MEMBERS' FORUM

This department is intended for the frank discussion of Institute activities, published articles, etc. Your co-operation in helping to make it a success will be some evidence that chemists are not quite so inarticulate as is commonly supposed.—EDITOR

To the Editor of *The* CHEMIST:

On behalf of the Committee on Licensing, permit me to reply to Mr. D. D. Berolzheimer's query in your March issue as to "what happened to the conclusions that were reached as a result of the meeting, about five years ago in New Haven, when there was a symposium on contracts?"

Dr. Treat B. Johnson, then President of the Institute, wished me to act as chairman of the committee then proposed to carry through the project. My consent was made absolutely conditional on the appointment of four other members on that committee who would agree to share equally with me in giving the estimated funds and time to carry the project through to a definite conclusion. Dr. Johnson failed in his efforts to secure the other four, and the appointment was declined because obviously the Institute was in no position to finance the work.

I suggest that Mr. Berolzheimer take a pencil and piece of paper some evening and figure out what the careful preparation of such a standard flexible form of contract for chemists in any and all classes of employment would cost in legal advice, in preprinting and distribution for criticism, and then in the collating and embodying of criticisms and suggestions. This committee has done so, and with its present membership the Institute is not warranted in undertaking the expense.

There are many things the Institute could and would be able to do for chemists if the chemists generally did their bit. The co-operation of about two hundred and fifty more Fellows would just about warrant the Institute in undertaking this "standard contract" job.

Yours truly,

New York, April 11, 1931 WILLIAM M. GROSVENOR, *F.A.I.C.*

To the Editor of *The* CHEMIST:

In reference to Dr. Grosvenor's report for the Licensing Committee published in your last issue, I have been requested by the Philadelphia Chapter to send you the following comments which I had made individually to the local Committee on this subject after reading an advance copy of the report:

In a general way, I would agree with the conclusions, and may say that in spite of Dr. Grosvenor's statement on page 1, that the vast majority of chemists merely feel on this subject and have not thought, I have thought very carefully on it for a number of years and I believe others have. I agree particularly with his recommendation of page 5, and believe that we ought to discuss the subject thoroughly at meetings.

Before we can say whether we believe in licensing, we must define what we mean by licensing, and to whom we propose to apply it. Shall it be only the commercial chemist who does analysis and research for pay among miscellaneous clients, or shall it be also the hired employee of a corporation or educational institution?

Shall the law forbid a manufacturer, or a coal company, or a university to employ under the name of *Chemist* or *Chemical Engineer*, *Director of Chemical Research*, or *Professor of Chemistry*, any man who is not licensed? I do not see how the latter is possible.

On the other hand, the protection of our standards of ethics and the bringing to

time of the offender is probably only practicable as Dr. Grosvenor points out, by having commercial chemists, at least—who undertake chemical work publicly for pay—licensed by law.

Philadelphia, April 14, 1931 HORACE C. PORTER, *F.A.I.C.*

To the Editor of *The* CHEMIST:

I take pleasure in sending you these paragraphs clipped from a news item of Indianapolis in *The New York Herald Tribune* for April 2nd:

> "The society, in resolutions adopted today, disapproved of chemists lending their names or support to the testimonial form of advertising.
>
> "It also condemned any reference to the society in published statements of the testimonial type and disapproved of statements which impose on the public's confidence in the chemical profession.
>
> "The American Chemical Society in its policy of encouraging the distribution of scientific knowledge differentiates clearly between the publishing of scientific information or technical data on the one hand and testimonials or uncritical or inadequate statements on the other, the resolution set forth."

The American Institute of Chemists was founded on the basic principle that the profession of chemistry is made up of men and women. It has ever since consistently maintained that the acts of the members of the profession may affect the esteem in which the profession is held by the public.

It is therefore with whole-hearted rejoicing that the Institute learns from the news item printed above, that the principle to which it owes its existence is recognized and approved by that older and more numerous organization of chemists, the American Chemical Society. This is all the more agreeable news since the members of the American Chemical Society are brought together rather to "encourage the distribution of scientific knowledge," than to "advance the profession of chemistry in America."

New York, April 3, 1931 KARL M. HERSTEIN, *F.A.I.C.*

To the Editor of *The* CHEMIST:

Through the medium of our publication, I should like to raise some discussion on the problem of the obligations of chemists to the manufacturers who employ their services, to the public at large, and to their profession.

Modern manufacturing enterprises, if they are to endure, demand the services of chemists in many ways: to test the purity and quality of their raw materials; to maintain the uniformity of their processes and products; to conduct research leading to better quality; to lower cost; to meet market demands; and to aid sound sales propaganda. Manufacturers of the Bourbon type—who learn nothing and forget nothing—succumb to dry rot or to competition.

Assuming that a product is well made, reasonably priced, and ready for the market—does the chemist's service cease? By no means. Chemists are busy testing materials for construction, foods, drugs, cosmetics (to say nothing of beverages), to aid public officials in safeguarding the public safety, the public health, and the public purse. Chemists are in demand to discover the facts in cases of alleged law-breaking, and the violation of personal or of patent rights. Chemists are also entering into the active direction of business enterprises, because technical knowledge is valuable not only in discovering how to make products that will supply public needs, but also in demonstrating to the public the advantages of the products made. The passage of the *Food and Drugs Act* and the establishment of the *Federal Trade Commission*, have led or

compelled many manufacturers to have chemists seek out the actual facts, so that truth rather than expediency might govern labels and other advertising.

The importance of limiting advertising to the truth is evidenced by the statement in the last *Annual Report of the Federal Trade Commission* (1930), that its Special Board of Investigation "had referred to it 535 cases in which complaint had been ordered based on false and misleading or fraudulent advertising....

> "A large percentage of cases before the Board pertain to alleged cure-alls, devices for therapeutic treatments, and drug or toilet preparations, and it is significant to note that the total amount of newspaper space devoted to advertisements of medical products and toilet articles in 1929, according to a survey conducted by a department of the Government in fifty representative cities, was 81,146,000 lines. Foods and beverages were advertised to the extent of 74,241,000 lines, bringing the grand total of advertising of articles or services directly affecting the health of the consumer in these fifty cities to 155,387,000 lines.
>
> "A survey including leading weekly and monthly magazines, representative farm magazines, and advertising by radio, discloses that during 1929 there was expended for national advertising $231,629,270, of which total $64,260,218, or 27.7 per cent, was to advertise products which directly affect the health of the consumer: namely, drugs and toilet articles, $35,987,386; and foods and food beverages, $28,272,832....
>
> "The work of the Special Board has expedited the work of the Commission and it can be stated that generally the publishers and advertising agencies have expressed approval of the Commission's campaign against false and misleading and fraudulent advertising and have offered to co-operate to prevent the methods denounced by the Commission, as well as to aid advertisers in so modifying their copy as to bring it at all times in conformity with the law.
>
> "The co-operation accorded the Special Board by the advertiser, publisher, and agency is a complete vindication of the Commission's policy in respect to its new method of procedure in cases dealing with false, misleading, and fraudulent advertising in newspapers, magazines, and periodicals. A continued vigorous prosecution of this work will be necessary to give the Commission and the public the full benefit of this co-operation."

It is a legitimate and ethical function of chemists and other professional men, when asked, to seek out the truth for advertisers so that they may make proper advertising copy; or to give evidence, if the facts warrant, against false, misleading, or fraudulent advertisements. The public is entitled to know the truth as found by scientists, instead of being asked to accept the dicta of radio announcers, minstrels, or movie stars.

Professional men should face this as a duty and a responsibility, and should not shrink from a service of this kind where the public welfare demands that vociferous error, if not intentional falsehood, be attacked. Scientific men should have the courage of their convictions, even if in the eyes of the timid or the unprogressive they be convicted for their courage. The sooner professional men awake to this responsibility, the better for the public—and for themselves.

And the question that I wish to raise is:

What limitations should chemists place on the use which their clients may make of their reports on work done?

New York, March 31, 1931 JEROME ALEXANDER, *F.A.I.C.*

EMPLOYMENT NOTES

Bureau of Employment of the Chemists' Club

Reorganization of *The Bureau of Employment of the Chemists' Club*, as reported in our March issue, has been completed and the Bureau reports itself now well able to handle inquiries directed to it. Co-operation is being secured with employing organizations, and machinery has been set up to permit prompt answering of any inquiries that may be sent to it.

At the present time the Bureau has a number of calls for experts with long experience in several lines; *lacquer*, *synthetic resin*, *paper*, and certain types of *heavy chemical* experience are demanded.

Members of the Institute are urged to register with the Bureau to make their experience available when a call for it comes, and to refer employers to the Bureau when its services can be helpful. A benefit to the whole profession and the business of chemistry will be accomplished if such a centralized agency as the Bureau can act as a meeting ground for both employers and employees. Supported by the Chemists' Club, the Bureau is a neutral point in which both parties to the employment problem can freely meet.

Think of the Bureau *first!*

Openings Available

CB-560-1: CHEMIST ON PAPER BOARD. Middle West. $4000. Should be graduate of good engineering school and positively must have had experience in the manufacturing of paper board. Paper pulp men will not be considered unless they have had this paper board experience. Communicate with the Institute Secretary.

CA-576-1: CHEMICAL ENGINEER PAPER MFG. Mass. $5000. Permanent job. Must be thoroughly familiar with the practical phases of paper manufacturing and competent to take charge of research work in a paper manufacturing laboratory doing experimental and development work on all classes of paper. Preference given to a man between 30–35 years old, with technical education as a Chemical Engineer. The work will include some customer contact and the applicant must have the vision to grasp thoroughly the practical application of the technical phases of his work. URGENT. Communicate with Institute Secretary.

CA-577-1: CHEMIST-LABORATORY RESEARCH. Boston headquarters and eastern Massachusetts clients. $3000. Must be a graduate of a first-grade college chemistry course. Prefer man without textile experience but with knowledge of bleaching processes. Must have had experience in industrial chemical research, with a record of personal initiative and responsibility, capable of carrying things through on his own initiative. Communicate with Institute Secretary.

Positions Wanted

11X30	Graduate Chemist, 3 years' teaching experience, wishes position in research work or analytical chemistry.
11Y30	Graduate Chemist, 4 years' experience in analytical chemistry, metallurgy, and metallography, wishes position.
2X31	Chemist, thoroughly experienced in malted milk business, and allied food industries; available now.
2Y31	Ph.D. in Biochemistry, experienced in research on food products and fermentation; available in June.
5X31	Chemist, 17 years' experience in paper and food chemistry, available now.

CHANGES OF ADDRESS

SUMNER R. CHURCH (*p.* 74): Send mail to business address, Room 1525, 101 Park Avenue, New York, N. Y.

EDWIN DOWZARD (*p.* 78): Change home and mailing address to 1476 East 45th Street, Brooklyn, N. Y.

LEO FREUNDLICH: Send mail to business address, Hooton Chocolate Co., 365 North Fifth Street, Newark, N. J.

JOHN J. OVER (*p.* 103): Change mailing address to 746 Liberty Street, Franklin, Pa.

ALBERT M. SMOOT (*p.* 113): Change mailing address to Ledoux & Company, 155 Sixth Avenue, New York, N. Y.

SPECIAL ANNOUNCEMENT

A large representation from the Institute is desirable at the

CHEMICAL INDUSTRIES DINNER

Tickets: $7.00

Hotel Roosevelt **Thursday, May 7th**

Reservations: B. J. Gogarty, 649 East 51st St., Brooklyn

THE NEW MEMBERS

Fellows

WILLIAM ALLEN HAMOR, Assistant Director, Mellon Institute of Industrial Research, Pittsburgh, Pa.

WILLIAM LEE HILL, Assistant Chemist, Bureau of Chemistry and Soils, U. S. Department of Agriculture, Washington.

IRVING D. POLLAK, Chemist, Department of Purchase, 480 Canal Street, New York.

ALOIS X. SCHMIDT, Chief Chemist, Durkee Famous Foods, Inc., 80 Corona Avenue, Elmhurst, L. I.

Associates

JOSEPH BURWELL FICKLEN, III. Chemical Engineer, Travelers Insurance Co., Hartford, Conn.

BERLIN CARSON FRENCH, Instructor in Chemistry, Juniata College, Huntingdon, Pa.

Juniors

NATHAN BIRNBAUM, Fellow in Chemistry, College of the City of New York, 140th Street and Convent Avenue, New York.

DOUGLAS JOHN HENNESSY, Instructor in Chemistry, Fordham University, College of Pharmacy, New York.

KENNETH LEE JENNINGS, 207 Amanda Street, Clyde, Ohio.

APPLICATIONS FOR MEMBERSHIP

Fellows

FRANK ANTHONY DEMELFY, Research Chemist, Philadelphia College of Osteopathy, Philadelphia, Pa.

DANIEL DANA JACKSON, Executive Officer and Professor, Department of Chemical Engineering, Columbia University, New York.

JACOB KURTZ, Chemical Engineer, Callite Products Co., 547 35th Street, Union City, N. J.

WILLIAM STERICKER, Chief Chemist, Philadelphia Quartz Co., 121 South Third Street, Philadelphia, Pa.

Associates

SAM M. HUMPHREYS, Chemist, Fort Worth Laboratories, 828½ Monroe Street, Fort Worth, Texas.

CECIL LATHAM MANNING, Chemist, Fort Worth Laboratories, 828½ Monroe Street, Fort Worth, Texas.

DAVID EVANS SINGER, 9308 Avenue B, Brooklyn, N. Y.

Juniors

ROBERT F. CURRAN, Student, College of the Pacific, Stockton, Calif.

WILLIAM C. WATKINS, Senior Chemistry Student, College of the Pacific, Stockton, Calif.

KENNETH G. WATKINS, Student, College of the Pacific, Stockton, Calif.

CHARLES EMANUEL ENTEMANN, JR., Graduate Student, Cornell University, Ithaca, New York.

MICHAEL WERBLOW, Graduate Student (evening), College of the City of New York, New York, N. Y.

EDITORIAL

The Annual Meeting

The program for the Annual Meeting at Washington this year varies from established precedent.

The Council meeting will take place at 10:30 A. M. This leaves the morning free for other visiting members who wish to take advantage of the invitation of the Washington Chapter, and avail themselves of the convenient opportunity to visit some of the government laboratories.

At one o'clock, there will be a formal luncheon at the Carlton Hotel, at which the Institute Medal will be presented jointly to Mr. Andrew W. Mellon and Mr. Richard B. Mellon.

There will be brief addresses by Dr. Lawrence V. Redman, *F.A.I.C.*, President-Elect of the American Chemical Society, and a prominent early Fellow of Mellon Institute; by Dr. Frederick E. Breithut, National President of The American Institute of Chemists; by Mr. Andrew Mellon; and others.

The general business meeting for members will be held at three o'clock. Reports will be read by all officers, chairmen of local chapters, and of all standing and special committees.

This day's program will give visitors to Washington an excellent opportunity to see the city at its best, under the expert guidance of our local resident members. Those who plan to remain over Sunday should make arrangements directly with the Carlton Hotel.

Defining the Chemist

A few weeks of conversations on chemists and chemistry have recently brought home to us what we honestly believe to be the basic reason for the really lamentable lack of professional solidarity among chemists. Many men and women, fully qualified in every respect, do not know that they are chemists, and, misunderstanding the purpose of the Institute, have given it no thought simply because they supposed it did not concern them.

It is admitted that the public's composite picture of a chemist is extremely foggy; but it is not a little surprising to find that even many chemists themselves feel rather hazy about it. The conception of a *professional chemist* seems, unfortunately, to be limited to a person who dispenses his knowledge of things chemical from behind a glass door or a sign with his own name on it. Those who work for others—"oh yes, they are chemists by training, but since they are employed, well—just how *could* you classify them?" And the picture becomes nebulous again.

One of the objectives of this Institute—perhaps its most important one—is *to educate the public to an understanding of what a*

chemist is. To accomplish anything, the Institute needs the hearty co-operation of large numbers of chemists, but to amass them it seems that *an understanding of what a chemist is* must be conveyed also to certain groups of chemists themselves.

By this time it is agreed that there are all kinds of chemically trained men and women: in plants; in laboratories; at teachers' desks; in libraries; in patent offices; and in their own offices, selling their knowledge and advice. The fusion of all these types into a professional whole can be accomplished only by awakening the consciousness of all these different kinds of chemists to the sense of their need for professional solidarity.

Most of the lack of professional solidarity among chemists is traceable to the former lack of a well-defined status based on minimum standards of education and experience, so the problem seems to resolve itself into the very important matter of chemical education. When all reputable universities and colleges will agree to offer curricula that conform to definite minimum standards, the chemically educated student may learn to think of himself first as a *chemist*, regardless of what practical use he makes of his knowledge—and then the future will take care of itself.

When reduced to the common denominator of adequate preparatory education, a man or woman has fulfilled the requirements for the practice of chemistry, that person has the right to the designation *chemist*, regardless of where he or she elects to utilize that knowledge—in law offices, in plants, in literary work, in teaching, or wherever.

Our speakers have told us repeatedly that "a man cannot toss aside his profession as he would an old coat." Yet, as conditions are now, the patent attorneys usually think of themselves first as lawyers; the works chemists prefer to call themselves engineers; the writers often have to explain how they happen to be such arty-scientific persons; and the teachers are swallowed up in the vast hordes of all kinds of teachers.

As for ways and means of bringing order out of this chaos among the thousands who have already left the schools, the Institute is striving to do whatever will prove to be the average best for all concerned. The objection has been raised that licensing the chemist will not *ipso facto* make him a better chemist. Granted; but the chances are that a license, if issued by some competent body, will tag a chemist as a recognizable professional entity, will spare him a lot of explaining and will be fairer both to himself and to those whom he serves. So, if licensing is to be the answer, The American Institute of Chemists, as the professional body devoted to advancing the interests of *chemists* as persons, rather than those of *chem-*

istry as a science, must take an active part in furthering such a movement.

What logical reason can any chemist give for not being interested in the work of the Institute? If he is well established and feels that he personally has nothing to gain, his financial support, and his co-operation will help to benefit others; if he is teaching and feels out of touch with all such "extra-curricular activities," he needs that very contact with those engaged in other lines of work, to give him a better viewpoint in his teaching of future chemists; and other chemists, engaged as they are in all kinds of industrial and professional work, should be encouraged to unite professionally, to build up a strong organization, to meet and exchange ideas with one another not as scientific workers, but as persons—social human beings.

The Institute wants to define the *chemist* and secure professional recognition for him. There are doubtless many chemists who would like to have their status improved, but it has probably not occurred to them to do anything about it. Individuals can do little; but an organized body, delegated to present well defined views, can usually accomplish its purpose if it has the support of enough individuals solidly united for the common cause.

—F. E. W.